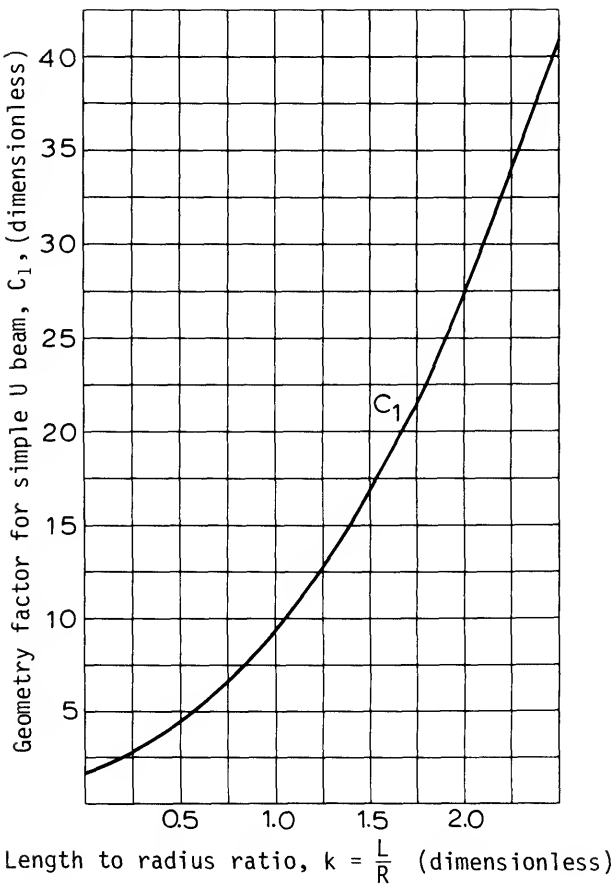

Fig. 26.14 Deflection chart for U beam without constraint.

Substituting the numerical data from Fig. 26.17 gives $Y = 0.368$ in. Finally, using Eq. (26.37), we obtain the maximum bending stress of $S_b = 15{,}360$ psi. ◆

Design Problem 26.3

Develop the general expression for the bending moment at the restrained end of a U spring, with the ends fixed as to slope, as shown in Fig. 26.12.

Solution

For one-half of the spring, the bending moment equations for the straight and curved portions are

$$M_1 = M_f - Px$$
$$M_2 = M_f - PR(k + \sin\theta)$$